

HOME SECURITY SYSTEM

Harsh Chaudhary¹, Amit Khare¹, Hritik Chandrawanshi¹, Harsh Raghuvanshi¹, Hardik Jain¹

¹ Department Of Information Technology, AITR, Indore, India

Abstract— Internet of Things can prove that technology has rapidly evolves. Nowadays, the usage of internet had been widely used around the world. However, as technology advanced the need for home security system using Internet of Things had becoming more crucial. However, current system used by the developers are merely too simple and focusing more on home automation system. Besides that, current home security system on the market was too expensive due to the complexity of the devices which sometimes used an expensive microcontroller or microprocessor. Therefore, a development of home security system using Internet of Things with online database server is needed. Home security has changed a lot from the last century and will be changing in coming years. Security is an important aspect or feature in the smart home applications. The new and emerging concept of smart homes offers a comfortable, convenient, and safe environment for occupants. Conventional security systems keep homeowners, and their property, safe from intruders by giving the indication in terms of phone call.

Keywords— Global System for Mobile Communication (GSM), Internet of things (IOT)

I. INTRODUCTION

The IOT concept was coined by a member of the Radio Frequency Identification (RFID) development community in 1999, and it has recently become more relevant to the practical world largely because of the growth of mobile devices, embedded and ubiquitous communication, cloud computing and data analytics. Imagine a world where billions of objects can sense, communicate and share information, all interconnected over public or private Internet Protocol (IP) networks. These interconnected objects have data regularly collected, analyzed and used to initiate action, providing a wealth of intelligence for planning, management and decision making. This is the world of the Internet of Things (IOT). Internet of things common definition is defining as: Internet of things (IOT) is a network of physical objects. The internet is not only a network of computers, but it has evolved into a network of device of all type and sizes , vehicles, smart phones, home appliances, toys, cameras, medical instruments and industrial systems, animals, people, buildings, all connected ,all communicating & sharing information based on stipulated protocols in order to achieve smart reorganizations, positioning, tracing, safe & control & even personal real time online monitoring , online upgrade, process control & administration. We define IOT into three categories as below: Internet of things is an internet of three things:

- (1) People to people.
- (2) People to machine /things.
- (3) Things /machine to things /machine, Interacting through internet.

Internet of Things is a new revolution of the Internet. Objects make themselves recognizable and they obtain intelligence by making or enabling context related decisions thanks to the fact that they can communicate information about themselves. Internet of things (IoT) is a global infrastructure for the information society, enabling advanced services by

interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies.

The goal of the Internet of Things is to enable things to be connected anytime, anyplace, with anything and anyone ideally using any path/network and any service.

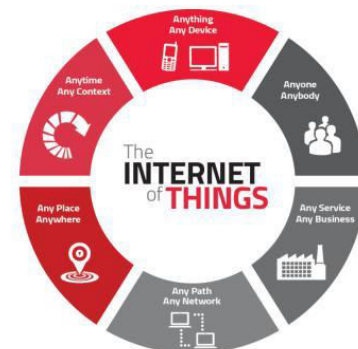


Figure 1 : Internet of things

Today we are living in 21st century where automation is playing an important role in human life. It provides home security and emergency system to be activated. Our Home Security System refers to reducing human efforts but also energy efficiency and time saving. The main objective of security system is to control security by using GSM when a person is away from home. The system alerts the person in case a burglar enters the house by calling on person's mobile phone which will enable them to protect their home from burglars. Security System based on GSM and implies that whenever a person tries to enter into the house then a call will

be sent to house owner's mobile phone indicating the presence of some person inside the house and the house owner can take some preventive measure in order to protect his house from the burglar which will reduce the human hard work.

II. RELATED WORK

Problem Statement : Nowadays, "home security system " is very important to every house because there are have a lot of robbery cases happen in everywhere. This home security system actually can alert a resident from any intruder. It is important to safeguard the homes on everyday basis, especially when resident travels or away for certain period of time. So, before making any travel, residents must make sure that their homes are safe to leave. That's why a security system was created to solve this problem. In another word, this system is an investment for the peace of the residents. The security means the life of the people is being protected against danger, loss, and criminals. In the general sense, security is a concept similar to safety. So, when using this system, it will make the home and life of the residents more safely from any intruders.

Objectives : The aim of the project is to develop and launch on up to date, reliable and user friendly security system to automate home security using microcontroller circuitry synchronized with GSM module with an objective to provide maximum possible security based on an automatic emergency care response using detection system.

General objectives of the project are defined as:

- To effectively receive and transmit data via phone call.

- Easy to install and cheap.

- To eliminate the need of being physically present in any location to control their home.

- Minimize power and time wastage .

- It offers a comfortable, convenient and safe environment for residents

- It replaces human works by technology .

Need For The New System : There is no such system exist in India. In India the people still feel unsafe to leave thier houses

on the lock system .they need a smart home security system which will allow them to keep their valuables safe from the thefts and keep burglars away from their house .These system can also be used as a defence mechanism in war fields as it can detect the humans . This can also be used in museums and banks to protect the valuable things .

III. PROPOSED SYSTEM

This home security system actually can alert a resident from any intruder. It is important to safeguard the homes on everyday basis, especially when resident travels or away for

certain period of time. These system can also be used as a defence mechanism in war fields as it can detect the humans. This can also be used in museums and banks to protect the valuable things. The implementation of Home Security Systems is very much essential in today's world as there is a growing demand for security and protection from various kind of threats and vulnerabilities. Due to the ease of use and low cost our system provides a good amount of security for the user as well as it is easy to operate and install.

The user is notified by sending a call on his/her mobile which indicates the type of threat or problem detected by the sensors.

Output:

It sense the motion of any intruder and makes led glow and make a phone call to the house owner.

IV. HOME AUTOMATION SYSTEM USING ARDUINO

Arduino is an open source architecture that uses Atmega2 microcontroller. For programming the microcontrollers, the Arduino platform provides an integrated development environment (IDE) based on the Processing project, which includes support for C, C++ and Java programming languages. Arduino has two variants Arduino Uno and Arduino Mega, Arduino Uno has 20 pins that can be used for both input and output whereas Arduino Mega has 80 pins for input and output, so it can connect number of home equipment's. It's ARM (Advanced RISC Machine) based processor also speeds up the processing.

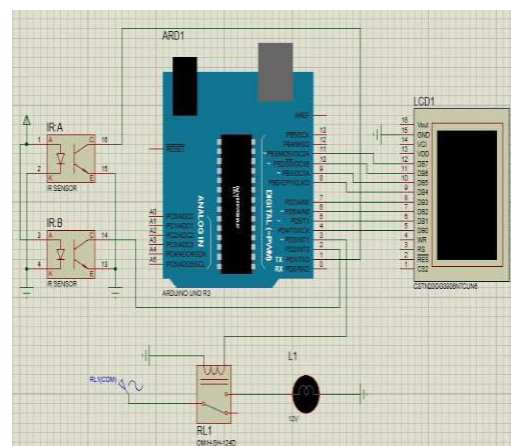


Figure 2 : Design of Arduino based System

HARDWARE :

Arduino mega 2560 : Arduino was born at the Ivrea Interaction Design Institute as an easy tool for fast prototyping, aimed at students without a background in electronics and programming. Arduino is an open-

source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a sensor, module, turning on an LED, publishing something online.

Gsm 800l with antenna : GSM is a mobile communication modem; it stands for global system for mobile communication (GSM). The idea of GSM was developed at Bell Laboratories in 1970. A GSM digitizes and reduces the data, then sends it down through a channel with two different streams of client data, each in its own particular time slot. The digital system has an ability to carry 64 kbps to 120 Mbps of data rates.

Sim Card - 2g/3g.

PIR motion sensor : A passive infrared sensor (PIR sensor) is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view. They are most often used in PIR-based motion detectors. PIR sensors are commonly used in security alarms and automatic lighting applications. PIR sensors detect general movement, but do not give information on who or what moved. For that purpose, an active IR sensor is required.

Jumper wires : This is used to connect all the components with the help of wires.

Buck strip connector (pin heads)

Leds : It will show the detected motion as a red light.

Adapter - 12v

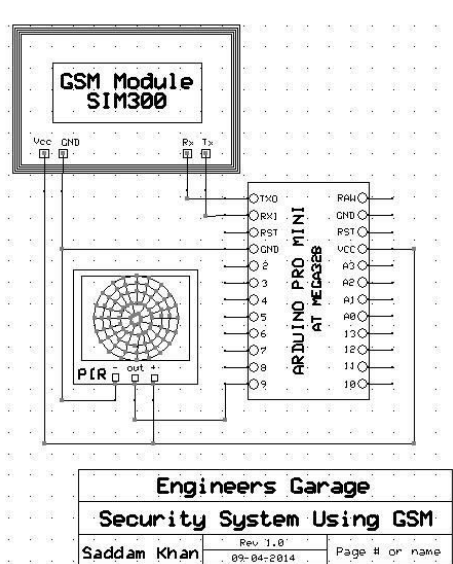


Figure 3 : Circuit Diagram

V. CONCLUSION AND FUTURE SCOPE

Circuit of this security system is very simple. Digital Pin number 9 of Arduino Pro Mini is directly connected to output pin of PIR sensor. And Rx and Tx pins of Arduino are directly connected to the Tx and Rx pins of GSM module respectively.

It means a cross connection take place between Arduino and GSM module. Due to in-build Rs232 serial communication section on the GSM module, there is no need of RS232 serial communication section. PIR sensor is also available in market easily. And you can build it at your home also.

This is to conclude that the project that we undertook was worked upon with a sincere effort. Most of the requirements have been fulfilled up to the mark and the requirements which have been remaining, can be completed with a short extension .This project would definitely satisfy all the requirements and would be beneficial for the Industries and Institutions.

The home security system has a long way to go. As the technologies improving every second, with time we may have many ways for home security with more light protocol and less delay in the output. With upcoming technologies there will be good enhancement in the computer board as well as the communication protocols, which will make it simpler as well as more light and secure

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